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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/538,470

06/09/2005

Eiji Iwamura

TIP 036

3641

23408

7590

05/28/2010

Gary C. Cohn, PLLC  
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EXAMINER

MCCRACKEN, DANIEL

ART UNIT

PAPER NUMBER

1793

NOTIFICATION DATE

DELIVERY MODE

05/28/2010

ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

garycohn@seattlepatent.com

<b>Office Action Summary</b>	<b>Application No.</b> 10/538,470	<b>Applicant(s)</b> IWAMURA, EIJI	
	<b>Examiner</b> DANIEL C. MCCracken	<b>Art Unit</b> 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 28 December 2009.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1,2,5-8,10 and 11 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-2, 5-8, 10-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 June 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948)                        | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

Citation to the Specification will be in the following format: (S. # : ¶/L) where # denotes the page number and ¶/L denotes the paragraph number or line number. Citation to patent literature will be in the form (Inventor # : LL) where # is the column number and LL is the line number. Citation to the pre-grant publication literature will be in the following format (Inventor # : ¶) where # denotes the page number and ¶ denotes the paragraph number.

### ***Status of Application***

The Notice of Abandonment dated 1/21/2010 was in error and is vacated. This Office Action is in response to Applicants amendment filed 12/28/2009. Claims 1-2, 5-8 and 10-11 are pending with Claims 8 and 10 currently amended. Claims 3-4 and 9 are acknowledged as cancelled.

### ***Response to Arguments***

#### **Claim Rejections – 35 U.S.C. §102**

I. With respect to the rejection of Claims 2, 5, 7-8, and 10 under 35 U.S.C. 102(b) as being anticipated by US Statutory Invention Registration H1,924 to Zabinski, et al., Applicants traversal is on the grounds that “[a]t page 4, penultimate line the examiner says that ‘voids appear to be suggested by the process’, but this is merely conclusory.” (Remarks of 12/28/2009 at 4). Page 4 of the Office Action dated 6/25/2009 was the response to Applicants remarks. Applicants are traversing the response to arguments versus the actual rejection itself. This is not understood and not persuasive. Applicants go on to state “[i]n restating the 102(b) rejection on

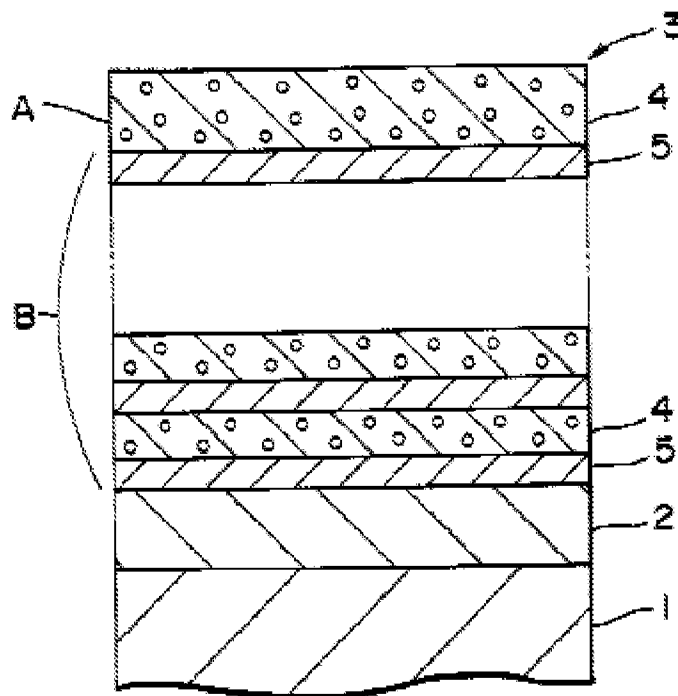
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page 8, the examiner ignores the “voids” limitation altogether.” This is factually false. The office action stated “given the substantial similarity in processes (magnetron sputtering), it is expected that the claimed properties (**voids**) are taught. *Compare e.g.* (Zabinski 3: 19) (“sputtering”) *with* (S. 7: 23).” (Non-final rejection of 6/25/2009 at 8) (emphasis added). Clearly, voids were addressed and not “ignore[ed]” as stated. A rationale tending to show inherency was presented and the burden shifted to Applicant to show an unobvious difference. Applicants have not done so here. The remarks related to what would or would not make sense based on what Zabinski contemplated amount to speculative attorney argument. *See* (Remarks of 12/28/2009 at 4) (“None of this would make sense . . . Zabinski only contemplates that he will manufacture fully dense films.”) What is a ‘fully dense’ film? Density is not fully or partially anything – it is mass per unit volume. Even Applicants “porous” film has a “density.” Distinguishing on this basis is meaningless, absent a density in the claims, which these claims do not contain.

With respect to Claim 5, Applicants state that “Claim 5 requires that the carbon source contains pieces of the metal element,” and allege that Zabinski fails to teach this. (Remarks of 12/28/2009 at 4). This has been considered and is persuasive. Arguably the claim reads on Zabinski in that the metal from the magnetron and the carbon from the target that is laser ablated combine before they are deposited on the substrate, *i.e.* they are a “source of carbon containing pieces of at least one metal element,” if for only a fleeting moment before the deposition on the substrate. This however would appear to be an unreasonable construction in light of the passages in the specification related to a target with metals deposited on the surface. *See e.g.* (S. 7: 27-30; 8: 28-30). The rejection of Claim 5 is WITHDRAWN. Rejections of the remaining claims are MAINTAINED.

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**II.** With respect to the rejection of Claims 2, 7 and 8 under 35 U.S.C. 102(b) as being anticipated by US 2001/0031346 to Iwamura, Applicants traversal is on the grounds that Iwamura doesn't teach voids. (Remarks of 12/28/2009 at 5). Applicants state "The examiner refers to "Figures 3-5" as showing voids." Once again, this misstates the office action. The office action referred to all figures, including Figure 1, which shows this:



Clearly, voids are shown (denoted by circles). The arguments directed towards the micrographs of Iwamura are likewise, not persuasive. Applicants are claiming pores of all sizes (nanometers or larger), making any distinction on these grounds irrelevant. As a practical matter, there is very little if any difference between Applicants micrographs and those of Iwamura. Stated differently, if micrographs are insufficient for demonstrating possession of pores in Iwamura, they are

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insufficient for demonstrating possession of pores in Applicants disclosure. All that is left is comparison of the illustrations. The rejection is MAINTAINED.

**III.** With respect to the rejection of Claims 2 and 7-8 under 35 U.S.C. 102(b) as being anticipated by Bauer, et al., *Mechanical properties and performance of magnetron-sputtered graded diamond-like carbon films with and without metal additions*, Diamond and Related Materials 2002; 11: 1139-1142 (hereinafter “Bauer at \_\_\_”), Applicants traversal is on the grounds that “Bauer’s pressures are much different than applicants’.” (Remarks of 12/28/2009 at 5). Applicants do not point out where Bauer states this, but the Examiner assumes they are referring to (Bauer at 1140, col. 1). Presumably, the implication is that because of this difference, Bauer does not teach pores. This has been considered, but is not persuasive. Applicants specification states that pressure affects the density. *See* (S. 8: 2-23). There is no evidence presented to state that the pressures taught by Bauer would lead to a lack of pores. Furthermore, Applicants themselves state that “vacuum deposition” (or “any physical vapor deposition (PVD) method” for that matter) can be used to make their own films. (S. 7: 22). Pressure does not appear to be as critical as alleged in the remarks. Bauer employs these low pressures. As such, and as no rebuttal evidence has been submitted, the rejection is MAINTAINED.

**IV.** With respect to the rejection of Claim 6 under 35 U.S.C. 102(b) as being anticipated by US 4,503,125 to Nelson, Applicants traversal is on the grounds that “Nelson does not describe such a carbon source [that contains pieces of Ti, Zr, Hf or Y].” (Remarks of 12/28/2009 at 6). Applicants discuss the sequential addition of titanium and carbon. *Id.* Upon review, Nelson appears to teach sputtering of the titanium from a titanium target, versus the carbon-metal

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target/source as claimed. Furthermore, the deposition appears to take place sequentially versus simultaneously as suggested by the claim. (Nelson 4: 29 *et seq.*) The rejection is WITHDRAWN.

Claim Rejections – 35 U.S.C. §103

I. With respect to the rejection of Claims 1 and 11 under 35 U.S.C. 103(a) as being unpatentable over US Statutory Invention Registration H1,924 to Zabinski, et al. in view of US 5,753,387 to Takami, et al. to show a state of fact, Applicants present a discussion of Zabinski, but no actual traversal. The arguments seem to have something to do with “‘columns’ that permeate at least partway through the thickness of the film.” (Remarks of 12/28/2009 at 6) This is not persuasive. Applicants are not claiming any sort of “columns,” etc in the film. Applicants then encourage the Examiner to read the specification. (Remarks of 12/28/2009 at 7). (“The examiner is encouraged to re-read page 6 line 29 through page 8 line 24 of applicants’ specification.”). This has been considered, but is not persuasive. The claims define the invention, not the specification. *See* 35 U.S.C. 112, ¶2. These arguments appear to be directed towards unclaimed features, and as such, are immaterial to the claims as rejected.

Applicants in part address the rejection, which was on an optimization of result-effective variables rationale, but again, argue unclaimed features (columnar, etc.). (Remarks of 12/28/2009 at 7). Arguing unclaimed features is not persuasive, unless perhaps these features are unexpected results presented to rebut the obviousness rejections, but Applicants do not develop this point. Applicants state on and for the record in their own specification that any physical vapor deposition method can be used to make the claimed films. (S. 7: 21-22). As such, slight differences in the process do not appear to be as critical as they are now argued.

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Disclosed embodiments (columnar, etc.) will not be imported into the claim. The rationale articulated in the rejection still holds. Zabinski relates density to deposition rate. (Zabinski, column 4). Ergo, the densities of the films can be controlled by changing the deposition rate. The rejection is MAINTAINED.

**II.** With respect to the rejection of Claims 1 and 11 under 35 U.S.C. 103(a) as being unpatentable over US 2001/0031346 to Iwamura in view of US 5,753,387 to Takami, et al. to show a state of fact, Applicants arguments are again directed to unclaimed features (columns). *See* (Remarks of 12/28/2009 at 8) ("To get from the Iwamura reference to applicants' claim 1 and 11 inventions, one would have to (1) infer, with no basis in the Iwamura reference, that there was some reason to produce a film having column-like low density regions."). Applicants are not claiming columns or anything column-like. Applicants are claiming regions with densities, not columns. Different layers of a film meets this "first region, second region" language. The rationale articulated in the rejection was not traversed, and all arguments appear directed towards unclaimed features. The rejection is MAINTAINED.

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

**I. Claims 2, 7-8 and 10 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US Statutory Invention Registration H1,924 to Zabinski, et al.**



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With respect to Claim 2, this claim requires “a film containing voids.” Zabinski teaches films. *See e.g.* (Zabinski 5: 17 *et seq.*). Claim 2 further requires that “the film is of an amorphous carbon containing at least one metal element selected from the group consisting of Ti, Zr, Hf and Y.” The metals and the amorphous carbon are taught. *See e.g.* (Zabinski 3: 25-32) (“The invention was demonstrated by production of nanocrystalline TiC carbides in an amorphous diamond-like carbon (a-DLC) matrix, but is also applicable to other carbides in an a-DLC matrix, including carbides of tungsten, silicon, vanadium, tantalum, zirconium, hafnium, chromium, molybdenum, niobium, copper, aluminum and others as would occur to the skilled artisan practicing the invention.”). Zabinski does not state *in haec verba* “a film containing voids.” However, Zabinski arrives at these films by magnetron sputtering. *See e.g.* (Zabinski 3: 39 *et seq.*). Applicants state on and for the record in their own Specification that “any physical vapor deposition (PVD) method” can make the material. (S. 7: 22). This can include sputtering. (S. 7: 23). This is the reasoning tending to show inherency. “Where applicant claims a composition in terms of a function, property or characteristic and the composition of the prior art is the same as that of the claim but the function is not explicitly disclosed by the reference, the examiner may make a rejection under both 35 .S.C. 102 and 103, expressed as a 102/103 rejection.” MPEP 2112 III. “[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on inherency’ under 35 U.S.C. 102, on prima facie obviousness’ under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted].” The burden of proof is similar to that required with respect to product-by-process claims. *In re Fitzgerald*, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980)

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(quoting *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)). As to Claim 7, note the composition limitations are taught at (Zabinski “Table 1”).

As to Claims 8 and 10, given the substantial similarity in processes it is expected that the claimed properties (voids extending to a “thickness direction”) are taught. Given the compositional makeup is taught, it is expected that any hydrogen storage capabilities or properties (to the extent they are to be given patentable weight) are necessarily taught.

**II. Claims 2, 7 and 8 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 2001/0031346 to Iwamura.**

With respect to Claim 2, this claim requires “a film containing voids.” Iwamura teaches films. *See e.g.* (Iwamura 1: [0002]). Claim 2 further requires that “the film is of an amorphous carbon containing at least one metal element selected from the group consisting of Ti, Zr, Hf and Y.” Iwamura recites amorphous carbon and titanium. (Iwamura 5: [0051]). As to Claim 7, the metal content is taught. (Iwamura 3: [0034]). As to Claim 8, voids are taught. (Iwamura “Figs.”). Given the compositional makeup is taught, it is expected that any hydrogen storage capabilities or properties (to the extent they are to be given patentable weight) are necessarily taught. “[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on inherency’ under 35 U.S.C. 102, on prima facie obviousness’ under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted].” The burden of proof is similar to that required with respect to product-by-process claims. *In re Fitzgerald*, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)).

**III. Claims 2 and 7-8 rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Bauer, et al., *Mechanical properties and performance of magnetron-sputtered graded diamond-like carbon films with and without metal additions*, Diamond and Related Materials 2002; 11: 1139-1142 (hereinafter “Bauer at \_\_”).**

With respect to Claim 2, this claim requires “a film containing voids.” Bauer teaches films. (Bauer at 1140, col. 2). Claim 2 further requires that “the film is of an amorphous carbon containing at least one metal element selected from the group consisting of Ti, Zr, Hf and Y.” Bauer discloses amorphous carbon with titanium. (Bauer at 1140, col. 1). As to the void limitations of Claims 2 and 8, given the same process appears to have been employed (magnetron sputtering), it is expected that the claimed properties (pores, etc) are taught. See also discussion accompanying response to arguments *supra* related to pressure, etc. “[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on inherency’ under 35 U.S.C. 102, on prima facie obviousness’ under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted].” The burden of proof is similar to that required with respect to product-by-process claims. *In re Fitzgerald*, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)). As to Claim 7, the compositions are taught. (Bauer at 1139, col. 2) (5 mol %).

**IV. Claims 1 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Statutory Invention Registration H1,924 to Zabinski, et al. in view of US 5,753,387 to Takami, et al. to show a state of fact.**

With respect to Claim 1, this claim requires “a hydrogen storage material in the form of a film comprising a first region composed primarily of an amorphous carbon containing from 0.02 to 30 atomic % of at least one metal element selected from the group consisting of Ti, Zr, Hf and Y.” Zabinski teaches an amorphous carbon composite with the claimed metals. *See generally* (Zabinski 2: 60 *et seq*) (composites/"amorphous carbon"), (Zabinski 3: 25-32) (metals). Claim 1 further requires “and a second region that extends in a thickness direction of the film composed primarily of an amorphous carbon, the second region having a density from 10 to 40% lower than that of the first region.” As to these density limitations, note the discussion in column 4 of Zabinski that relates density as a function of deposition rate. Optimizing this (which is akin to changing the deposition rate) is well within the skill of the art. *See* MPEP 2144.05 regarding optimization of result-effective variables. As to Claim 11, this claim appears to have a density that would read on amorphous carbon, taught by Zabinski. *See* (Takami 2: 55-60) (“wherein the carbonaceous material has a region of amorphous carbon structure and a region of graphite structure, and the carbonaceous material has a true density of 1.8 g/cm<sup>3</sup>”) (note Takami is relied on for the density limitation only).

**V. Claims 1 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2001/0031346 to Iwamura in view of US 5,753,387 to Takami, et al. to show a state of fact.**

With respect to Claim 1, this claim requires “a hydrogen storage material in the form of a film comprising a first region composed primarily of an amorphous carbon containing from 0.02 to 30 atomic % of at least one metal element selected from the group consisting of Ti, Zr, Hf and Y.” Iwamura teaches the metal content. (Iwamura 3: [0034]). Claim 1 further requires “and a

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second region that extends in a thickness direction of the film composed primarily of an amorphous carbon, the second region having a density from 10 to 40% lower than that of the first region.” As to both density limitations, note the discussion of the different thicknesses of the different high hardness and low layers. (Iwamura “Table 1”). The hardness is apparently a function of the composition of the material, which would in turn necessarily affect the density of each layer. (Iwamura 3: [0034]). Altering both the composition (to affect hardness) and ergo density is well within skill in the art, as demonstrated by Iwamura. *See* MPEP 2144.05 regarding optimization of result-effective variables. As to Claim 11, this claim appears to claim the density of amorphous carbon, taught by Iwamura. *See* (Takami 2: 55-60) (“wherein the carbonaceous material has a region of amorphous carbon structure and a region of graphite structure, and the carbonaceous material has a true density of 1.8 g/cm<sup>3</sup>”) (note Takami is relied on for the density limitation only).

**VI. Claim 5 is rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 4,844,785 to Kitabatake, et al. in view of US 3,480,575 to Coats to show a state of fact.**

With respect to Claim 5, this claim requires “providing a source of carbon containing pieces of at least one metal element selected from the group consisting of Ti, Zr, Hf and Y.” Kitabatake teaches a source of carbon containing at least titanium. *See* (Kitabatake 4: 22) (teaching titanium), (Kitabatake 6: 14-16) (describing a target of graphite), *and* (Kitabatake 7: 20 *et seq.*) (discussing mixing titanium with the graphite target). Claim 5 further requires “forming a film composed of an amorphous carbon containing said metal element on the surface of a base material at a temperature of 773 K or less according to a gas phase synthesis.”

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Kitabatake teaches forming an amorphous carbon film. *See e.g.* (Kitabatake 3: 67 *et seq.*) (“The impinging and bombarding particles of carbon were made to aggregate on the surface 8 to form a hard carbon film. This film was in an amorphous state.”). Given that metal was incorporated into the target as claimed, it is expected that the film contains said metals. “[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on inherency’ under 35 U.S.C. 102, on prima facie obviousness’ under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted].” The burden of proof is similar to that required with respect to product-by-process claims. *In re Fitzgerald*, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)). This process is carried out at room temperature. *See e.g.* (Kitabatake 2: 59). “Room temperature” is generally recognized as less than 773 K (~ 500 °C), as required by the claim. However, to the extent evidence is needed to show the meaning of this term, the Examiner provides Coats. *See* (Coats 7: 19-20) (“It is also clear when cooled to room temperature (68 °F.).”). Room temperature – *i.e.* 68 °F (293.15 K) - is less than 773 K.

**VII. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 4,844,785 to Kitabatake, et al. in view of Zhang, et al., *Residual stress characterization of diamond-like carbon coatings by an X-ray diffraction method*, Surface Coatings Technology 1999; 122: 219-224 (hereinafter “Zhang at \_\_”).**

With respect to Claim 6, this claim requires “providing a source of carbon containing pieces of at least one metal element selected from the group consisting of Ti, Zr, Hf and Y.” Kitabatake teaches a source of carbon containing at least titanium. *See* (Kitabatake 4: 22)

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(teaching titanium), (Kitabatake 6: 14-16) (describing a target of graphite), *and* (Kitabatake 7: 20 *et seq.*) (discussing mixing titanium with the graphite target). Claim 6 further requires “forming a film composed of an amorphous carbon containing said metal element on the surface of a base material under a process gas pressure of 1.33322 Pa or more according to a sputtering process.” Kitabatake teaches forming an amorphous carbon film. *See e.g.* (Kitabatake 3: 67 *et seq.*) (“The impinging and bombarding particles of carbon were made to aggregate on the surface 8 to form a hard carbon film. This film was in an amorphous state.”). Given that metal was incorporated into the target as claimed, it is expected that the film contains said metals. “[T]he PTO can require an applicant to prove that the prior art products do not necessarily or inherently possess the characteristics of his [or her] claimed product. Whether the rejection is based on inherency’ under 35 U.S.C. 102, on prima facie obviousness’ under 35 U.S.C. 103, jointly or alternatively, the burden of proof is the same...[footnote omitted].” The burden of proof is similar to that required with respect to product-by-process claims. *In re Fitzgerald*, 619 F.2d 67, 70, 205 USPQ 594, 596 (CCPA 1980) (quoting *In re Best*, 562 F.2d 1252, 1255, 195 USPQ 430, 433-34 (CCPA 1977)). Sputtering is taught. *See e.g.* (Kitabatake 4: 29-39) (“sputter the particles from the surface”). Kitabatake does not disclose the pressure at which the process is carried out. However, chamber pressure is recognized in the art as affecting properties in the resulting film, for example residual stress. Similarly, the pressure affects the ions traveling from the target to the surface where the film is deposited. This relationship is detailed in Zhang. *See* (Zhang at 223, col. 3 – 224, col. 1). Note also that Zhang discloses chamber pressures of 1.3 Pa, which is approximately that which is claimed. Modifying or optimizing this variable to adjust the collisions of ions traveling to the deposition surface is well within the skill in the art. The

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articulated rationale is that it would appear to employing known techniques (Zhang) to improve similar methods (Kitabatake) in the same way. This does not impart patentability. *See* MPEP 2143.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DANIEL C. MCCracken whose telephone number is (571)272-6537. The examiner can normally be reached on Monday through Friday, 9 AM - 6 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley S. Silverman can be reached on (571) 272-1358. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Daniel C. McCracken/  
Daniel C. McCracken  
Examiner, Art Unit 1793  
DCM